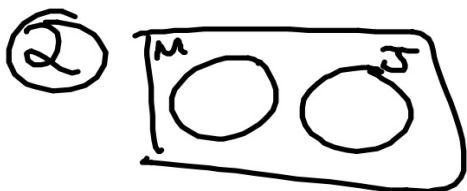


① ⑤ $P(B|A) = P(B)$

$$P(B \cap A) = P(B) \cdot P(A)$$

→ $0.218 \neq 0.20$



$$P(M \cap J) = 0$$

$$P(M \cup J) = P(M) + P(J)$$

Probability Rules Review #1


$$\textcircled{4} \textcircled{a} 0.099 = P(A \cap B)$$

$$\textcircled{b} P(A \cup B) = P(A) + P(B) - P(A \cap B)$$
$$0.43 + 0.18 - 0.099$$

$$\textcircled{5} P(H \cap E) = P(H) \cdot P(E)$$
$$\left(\frac{1}{2}\right) \cdot \left(\frac{1}{2}\right)$$

$$(15) P(E) = 0.42$$

$$P(E \cap VT) = 0.27$$

$$P(VT|E) = ? \frac{P(VT \cap E)}{P(E)}$$


(7) B

(8) B

(9) B

(10) A

(11) E

Disjoint : $P(A \cap B) = 0$

Indep: $P(A \cap B) = P(A) \cdot P(B)$

$$P(B|A) = P(B)$$

(12) (a) {25, 29}

(b) $2/12 = 1/6$

(c) {26, 27, 28, 29, 30, 31}

(d) $3/12$

(e) $9/12$

(f) $4/12$

(g) $7/12$

(h) {20, 21, 22, 23, 24, 25, 26, 29, 30}

(13) (a) $P(H) = 0.43$

$P(H^c) = 0.47$

Total = $0.9 \neq 1$

(b) $P(T) = 0.18$

$P(B) = 1.08$

Cannot have prob. over 1

(14) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$0.7 = 0.3 + P(B) - 0.2$

$0.7 = 0.1 + P(B)$

$P(B) = 0.6$

(16) $P(F) = 0.40$

$P(F \cap S) = 0.22$

$P(S|F) = \frac{0.22}{0.40} = 0.55$

Perm

Arranging n objects,
taking r @ a time

Formula:
$${}_nP_r = \frac{n!}{(n-r)!}$$

Calc: n MATH \rightarrow PRB \rightarrow ${}_nP_r, r$

* ORDER does matter!

* more possibilities

Ex: $50nPr 3 =$

Comb

- The number of groups of n objects, taken r @ time.

Form: $\frac{n!}{r!(n-r)!}$

Calc: nCr

* order doesn't matter

* Less possibilities

Counting Rules

- all possible ways to combine diff. groups
- Form: $m \cdot n \cdot t$
- Ex: $3 \cdot 4 \cdot 3 \cdot 3 = 108$
- Ex: $\frac{26}{26} \cdot \frac{26}{25} \cdot \frac{26}{24} \cdot \frac{10}{10} \cdot \frac{10}{9} \cdot \frac{10}{8}$

$$(30nPr2) \cdot (28nC6)$$

327,763,800

Answers

$$\textcircled{1} \quad {}_{13}nPr\ 4 = \textcircled{17,160}$$

$$\textcircled{2} \quad {}_{13}nC_r\ 4 = \textcircled{715}$$

$$\textcircled{3} \quad 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 26 \cdot 25 = \textcircled{65,000,000}$$

$$\textcircled{4} \quad {}_{10}nC_r\ 5 = \textcircled{252}$$

$$\textcircled{5} \quad ({}_3nC_r\ 2)({}_7nC_r\ 2) = \textcircled{63}$$

$$\textcircled{6} \quad {}^{12}P_5 = \textcircled{792}$$

$$\textcircled{7} \quad 7 \cdot 3 \cdot 2 = \textcircled{42}$$

$$\textcircled{8} \quad {}^6P_2 = \textcircled{15}$$

$$\textcircled{9} \quad 8 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 = \textcircled{8,000,000}$$

$$\textcircled{10} \quad \boxed{8} \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 = \textcircled{483,840}$$

HW:

p. 337 #35 + 36
p. 390 #29 $P(D|M)$